Evaluating the efficiency of the wheat tariff regime in South Africa

F.H. Meyer

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Department of Agricultural Economics,
Extension and Rural Development
University of Pretoria
Pretoria, 0002
South Africa

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Abstract: A drastic change in the marketing system of wheat in South Africa has taken place over the past decade. For the first time an import tariff on wheat was implemented in the form of a variable import levy. Traditionally, countries have implemented variable import levy schemes in order to protect domestic price guarantees by means of determining a reference price, which was generally above the domestic guaranteed price, below which imports were not allowed into the country. In this paper the efficiency of the Wheat Tariff Regime in South Africa is examined, after it has been operational for the past seven years.

1. Introduction

Wheat is the most important grain crop in South Africa after maize and interestingly, the past decade has brought about a shift in the style of wheat marketing characterized by the transformation of a highly regulated dispensation to an essentially free one. As a result, the phasing out of the Wheat Board in 1997 has ensured that wheat producers are increasingly being exposed to international wheat markets. In addition, the economic policy in South Africa has changed dramatically, accompanying the almost global movement towards deregulation and liberalisation of the economy; resulting in a more market-based approach to both agricultural and macro-economic policy. Drastic adjustments to the marketing system of wheat took place and for the first time an import tariff on wheat was implemented in the form of a variable import levy, which was, and still is calculated according to the formula that is determined by the Board of Tariffs and Trade (BTT). In this paper, after reviewing the theoretical basis for a variable import levy scheme, the efficiency of the variable import levy scheme of the wheat market in South Africa is examined, and the economic effects are discussed.

2. Policy trends in the Wheat Sector

The South African agricultural sector has experienced a long history of state intervention. Figure 2.3 below, summarises the main historical events and deregulatory activities impacting on the wheat to bread value chain (NAMC, 1999).

[1]Department of Agricultural Economics, Extension, and Rural Development at the University of Pretoria, South Africa

The Marketing Acts of 1937 and 1968 respectively, provided the impetus for a period of sixty years characterized by the controlled marketing of the major agricultural industries. Under the auspices of "orderly marketing" a single marketing channel was established with agricultural cooperatives acting as agents for the marketing boards. Under the single channel marketing scheme, wheat farmers were guaranteed a fixed producer price at the beginning of the season, irrespective of the transactions costs incurred due to varying distances to final destinations for the delivery of products. This fixed producer price was set as follows: the Wheat Board would propose a basic price, this proposal was sent to the minister for approval, once a basic price was approved, the producer price was calculated by deducting the storage costs from the basic price. The basic price was determined by the previous year's basic price, adding the increase in production costs.

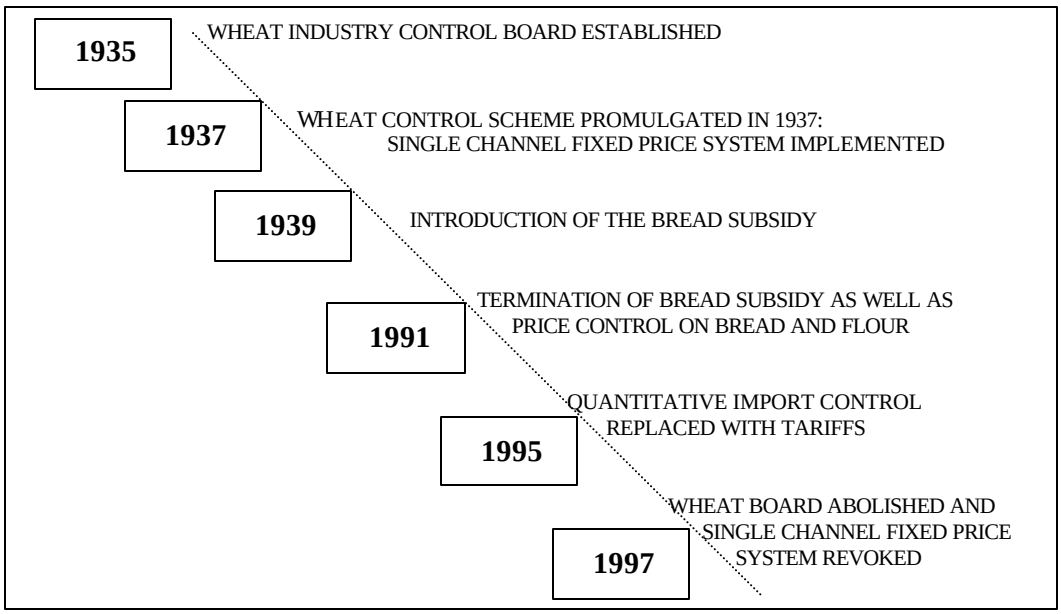

Figure 1: History and deregulation of the Wheat-to-Bread Value Chain (Source: NAMC, 1999)

During the early 1980's a general decline in the use of price controls occurred with a shift towards market-based pricing systems. GATT negotiations enhanced pressure for the abolition of quantitative import controls and the introduction of tariffs on agricultural commodities. In 1994 the Minister of Agriculture appointed a special committee to advise on a framework for and the implementation of a future agricultural marketing policy. The report recommended that an urgent solution be found for the fixed price system and that adjustments to the marketing system include

the implementation of an import tariff. The Wheat Forum was established and May 1994 was set as the target date by which the finalisation of aspects in view of submitting a tariff application to the department of trade and industry. Although import tariffs formally replaced quantitative import controls already in 1995, it was not until February 1998 that the first import tariff was implemented. After reviewing the theoretical basis for variable import levies in the following section, the nature of the wheat tariff regime will be discussed in more detail.

3. Theoretical Basis for a Variable Import Levy Scheme

Tariffs and quotas are the traditional mechanisms by which governments of importing nations intervene to protect their domestic producers from foreign competition. In many countries these intervention mechanism are introduced to protect internal price guarantees, which are often higher than free markets will deliver. Over time it became evident that tariffs and quotas have certain operational drawbacks. Fixed and ad valorem tariffs allow fluctuations in world prices to be transmitted fully or partly into the domestic market. Although binding import quotas insulate the domestic market from world price changes, this insulation could lead to the amplification of domestic price swings caused by internal demand and supply fluctuations (Houck, 1987).

Over the years a number of policy schemes have been devised to overcome the shortcomings of the conventional intervention mechanisms. When the South African Wheat Forum submitted a tariff application in 1994, it opted for one of these "improved import products", namely the variable import levy scheme. Figure 1 below depicts a partial equilibrium view of a basic variable import levy scheme, introduced by a small importing nation; therefore, the excess supply (ES) faced by this nation is perfectly elastic.

The starting point for the implementation of a variable levy is to set a reference price (threshold price) (P_R) high enough to protect the domestic subsidised price. The introduction of the variable import levy scheme produces the adjusted excess demand curve (ED*) of an importing nation. ED* is the original ED curve from point e to point b, and then has a vertical segment from point b down to point m. The reason for this vertical segment is that imports cannot enter the country at a price lower than the

reference price. Hence, imports are limited to om = sd. If no protective trade policy were employed, the internal market price would decrease to the level of the world price (P_W) and imports would increase to ow. At P_W, the "gap" between the world price and the reference price (P_R) is exactly bridged by the import levy (bd). The import levy varies as the difference between the reference price and the world price varies. If the world price should move above the reference price, the variable levy scheme would cease to operate because open market prices without protection would be above the reference price. Once in operation, the variable levy effectively disconnects domestic prices of affected imports from international prices. Similar to fixed or ad valorem tariffs, revenues may be generated for the central authority. At P_W, abdc = C represents the revenue to the central authority. As world prices fall, revenues increase, since the per-unit levy increases, and imports remain unchanged, and *vice versa*.

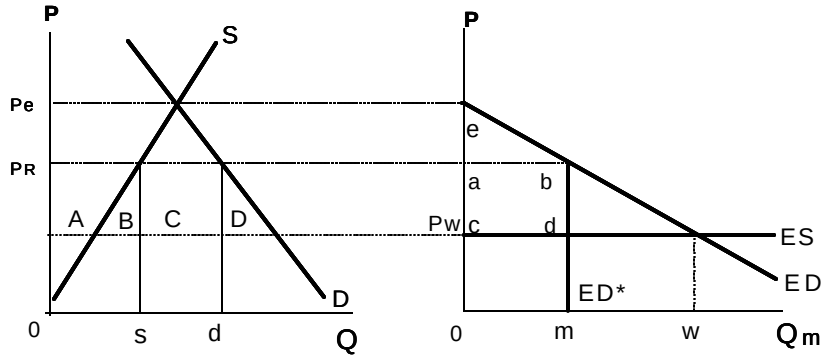

Figure 1: Variable Levy Scheme

The welfare effects of variable import levies are similar to those with ordinary tariffs and quotas. Producers enjoy the high price guarantees, which are protected by the import levy and producer surplus increases by A. However, it is also possible that producers could adversely be affected by this trade policy, since price stability may be associated with increased potential for farm income instability as domestic supplies fluctuate from season to season. Over time, stable price guarantees could induce a higher level of domestic production as producers respond to higher prices and increase their acreage. B represents some of the value lost by consumers that goes to sellers of variable inputs in order for the expansion in domestic production to take place. Consumers are worse off, since they have to pay more for their product, and consumer surplus decreases by A+B+C+D. Importers will also have to pay more for

their products and, therefore, are worse off. Furthermore, social losses occur in the small nation because internal prices are elevated above the free trade level and limited trade flows do not increase the level of the world price. D represents social/deadweight losses. No one in the society picks up this area in the redistribution. The rest of the world will not be affected by this protective trade policy, since a small nation faces a perfectly elastic supply curve, which implies that world prices do not change as the quantity of imports change.

4. Nuts and Bolts of the Wheat Tariff Regime

At the time (1994) the Wheat Forum submitted their tariff application to the Department of Trade and Industry, wheat was trading on the world market at prices above $200/ton. The Forum set the first reference price at $194/ton (Exchange rate R3.69 for US $1). A variable import levy would be introduced if world prices would drop below the reference price. In the years that followed the world price decreased drastically to a level of $110/ton in 1999. A new reference price was set at $157/ton (Exchange rate R6.11 for US $1), and a new import levy of R181/ton was calculated. This reference price is still used for the current calculation of the variable import levy. The calculation of the levy is based on the Hard Red Wheat (No.2) price in the USA. To calculate subsequent adjustments to the level of protection, the difference between the world price, on which the previous adjustment was based (base price), and the three-week moving average of the same price will be calculated on a weekly basis. When this deviation amounts to more than US $10/ton for three consecutive weeks, a new levy can be calculated, and a new base price will be set.

The calculation of the import levy on September 3, 2002, as presented in table 1, will be used to illustrate the practical operation of the variable import levy scheme. On September 3, the three-week moving average price was calculated at $170/ton, and the base price at $152.67(world price on which the adjustment was based on July 23), which amounts to a deviation of $17.33/ton. For three consecutive weeks the deviation had been greater than $10/ton, therefore, an adjustment to the levy could be calculated. A negative duty on wheat of R139.04=(157-170)*10.6952 was calculated. The new base price was set at $170/ton ($152.67 + $17.33) and in the week that followed the import levy ceased to operate.

Lastly, no import permit is required to import wheat.

5. Efficiency of the Variable Import Levy Scheme

Before the Uruguay Round the European Community chose variable import levies as the method to protect their domestic intervention system against cheaper imports (Ritson and Harvey, 1997). When the Wheat Forum opted for a variable import levy scheme, it was already aware of the fact that there would be no domestic subsidised price, which needs protection from cheaper imports. Therefore, the levy was introduced to protect producers from imports when the world price of wheat (US No2 HRW fob Gulf) would decrease below a level of $157/ton (reference price). It was argued that producers would not need protection, and consumer prices would be too high, if a levy were introduced at prices above the level of $157/ton.

However, close examination of the calculation of the import levy reveals that producers, were not, and will not be protected at the reference price level, under the current import regime. Furthermore, levies were, and will also be introduced at price levels higher than the reference price. The reason for this phenomenon is the formula, which is used to calculate the levy, and specifically, the additional specification that the three-week moving average price has to deviate from the base price by more than $10/ton for three consecutive weeks. Table 1 below represents the calculation of the import tariff at specific periods of time over the past two years.

On April 30, 2002 a duty on wheat of R347.43/ton was calculated, therefore, a duty that ensured an import price equal to $157/ton ($124.33 + $32.67). Yet the published levy could not be adjusted to this calculated level, since the deviation from the basis price was smaller than $10/ton and an import levy of R196/ton was published. We can refer to this levy as the effective import levy. When the effective import levy is divided by the exchange rate and added to the moving average price of three weeks, an import price of $142.76/ton ($124.33 + $18.43) is calculated. This calculation proves that the imports could enter the country at a world price that is lower than the reference price.

Table 1: Calculation of the Variable Import Levy

Week ending	US No2 HRW fob (ord) Monitor price	Base price	Deviation	Number of	Duty on	R/$ Exchange	Duty on	Published Levy

	Weekly prices	Moving average of 3 weeks		from the base price	weeks	wheat	rate	wheat	
	$/Ton	$/Ton	$/Ton	$/Ton		$/Ton	R	R/Ton	R/Ton
2002/04/30	121.00	124.33	130.33	6.00		32.67	10.6344	347.43	196.00
2002/06/25	137.00	134.00	130.33	-3.67		23.00	10.3500	238.05	196.00
2002/07/02	144.00	138.33	130.33	-8.00		18.67	10.0604	187.83	196.00
2002/07/09	148.00	143.00	130.33	-12.67	1	14.00	9.9990	139.99	196.00
2002/07/16	154.00	148.67	130.33	-18.34	2	8.33	10.0806	83.97	196.00
2002/07/23	156.00	152.67	130.33	-22. 34	3	4.33	10.0604	43.56	196.00
2002/07/30	154.00	154.67	152.67	-2.00		2.33	10.1112	23.56	43.56
2002/08/06	161.00	157.00	152.67	-4.33		0.00	10.5708	0.00	43.56
2002/08/13	168.00	161.00	152.67	-8.33		-4.00	10.5597	-42.24	43.56
2002/08/20	161.00	163.33	152.67	-10.66	1	-6.33	10.6610	-67.48	43.56
2002/08/27	171.00	166.67	152.67	-14.00	2	-9.67	10.6045	-102.55	43.56
2002/09/03	178.00	170.00	152.67	-17.33	3	-13.00	10.6952	-139.04	43.56
2002/09/11	197.00	182.00	170.00	-12.00	1	-25.00	10.4932	-262.33	0.00

During the past six months the world price for wheat increased drastically to reach a level of more than $200/ton. The specific time periods, in which the recalculation of the import levy took place, are presented in table 1. On July 23, a new levy of R43.56/ton was calculated and published in the following week. The new base price was set at $152.67/ton ($130.33 + $22.34). For three consecutive weeks the world price for wheat continued to increase, but at a rate that amounted to a deviation less than $10/ton from the new basis price. By the middle of August the world price had increased to $161/ton, a negative duty on wheat of R42.24/ton was calculated, but still the published import levy remained at R43.56/ton. Again, the deviation had not reached the critical level of $10/ton, which implied that imports could only enter the country at a price, which on this occasion was higher than the reference price (R43.56/10.5597 + $161.00 = $165.12).

In the following weeks the world price continued to increase, but now at a rate that was sufficient to let the three-week moving average price deviate from the base price by more than $10/ton. It was only on September 11 that the variable import levy scheme ceased to operate and wheat could be imported at the prevailing world price levels without any intervention mechanism. It is important to note that if the world

price had not increased above a level of $162.67 ($152.67(base price) + $10) the import levy would have remained at R43.56/ton.

One can draw the conclusion that there exists some margin of inefficiency (stickiness) in the operation of the current variable import levy regime. In some instances it might be the case that the regime does not protect the reference price, and in other cases it not only protects the reference price but also increases the minimum price level at which wheat can be imported.

6. Economic Effects

There are at least two ways to look at the economic effects of a protective trade policy in a partial equilibrium context. One is to study the direct effects on prices, production, trade, and consumption, then to identify the groups within the society who are likely to benefit or be hurt by the intervention. Another way is to evaluate the economic welfare changes that occur (Houck, 1987). Many of the economic effects can graphically be illustrate and explained by making use of the graphs, as presented in Figure 1. Yet, taking the discussion of the previous section into account, it becomes obvious that Figure 1 does not accurately reflect the effect of the variable import levy on the wheat market in South Africa. This can be proven by a partial equilibrium view of the wheat market on April 30, 2002 in Figure 2.

The difference between the two figures is the adjusted excess demand curve (ED*), which contains a second downward sloping segment, which combines point a and c, and then only contains the vertical segment cT. The fact that the sum of the world price and the import levy (P_{W+T} = $142) is lower than the reference price (P_R = $157) produces segment ac, which has a steeper slope than the original excess demand curve, but is not vertical. Therefore, imports are not limited to 0R = hi, as would be the case with the reference price, but to 0T = Lm. If no protective trade policy were in place, OS would be imported into the country. Revenues that are generated by the central authority have shifted from gade to fbce. Whether the revenues have increased or decreased, depends on the elasticity of the original excess demand curve ED. Traditionally, the excess demand curve of small countries can be classified as relatively elastic. This implies that the percentage change in quantity is greater than the percentage change in price. It is, therefore, evident that the revenues of the central

authority have increased with the decrease in price. However, it has to be kept in mind that this is only for a short period of time. As previously explained, it is possible that imports could only enter the country at a world price, which is higher than the reference price. If this were the case, then the revenues of the central authority will be lower. It can be argued that over a long period of time (4-5 years) the average revenues of the central authority would remain unaffected by the "stickiness" of the import levy.

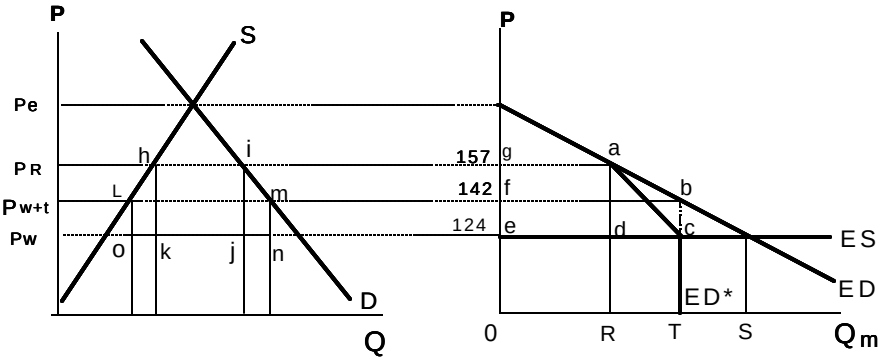

Figure 2: Partial Equilibrium View of the Wheat Market, April 30 2002

Figure 2 shows that production has decreased by ok (but still higher than production at free market prices), and consumption has increased by jn (but still lower than consumption at free market prices), due to lower market prices. If it were the case that producers received guaranteed prices equal to P_{W+T}, the next logical step would be to examine the distribution of welfare through the economy. Yet, in South Africa wheat farmers do not receive a guaranteed price, therefore, one needs to ask a critical question: What was the internal market price? On April 30, the South African Future Exchange (SAFEX) wheat spot price at Randfontein was R1873.23/ton and the import parity price (delivered at Randfontein) was R1931.88/ton. As previously discussed, imports could enter the country on this day at a world price of $142.67/ton. If the minimum price for imports were held at the reference price level, the import parity price would have equated to R2084.21 (R1931.88 + $14.33*10.6344). In a free market the import parity price would have been R1735.88/ton.

To carry on with this discussion would by meaningless, since this is only one day in a whole marketing season for wheat. One marketing season for wheat is on its turn again only one year in a global price cycle for agricultural commodities that could stretch over many years. Although South Africa is a net importer of wheat, whether

the domestic price of wheat goes up to the maximum level of import parity prices, depends on the relative scarcity of wheat in the domestic market. The main harvesting period for wheat is from December to the end of January. April is still early in the marketing season and the probability is very high that stocks satisfy domestic consumption. It would be dangerous to make the assumption that the "stickiness" of the import levy did not influence the market price (SAFEX) at all and, therefore, the behaviour of producers and consumers at this stage in the marketing season. This matter boils down to the basic notions of price transmission and formation in commodity markets. SAFEX prices for wheat come about as a result of supply and demand factors, which include weather conditions, consumer preferences, government policy, trade agreements, changes in living standards, technology, and the views of different participants in the market about the direction that prices are going to take in the future.

The question of causality goes beyond the scope of this study. The fact remains that there exists some sluggishness or stickiness in the calculation of the variable import levy of wheat. In Figure 2 above the world price for imports is depicted as $142/ton. However, over the long term the world price for wheat imports into South Africa could vary between $167/ton and $147/ton, as presented in Figure 3.

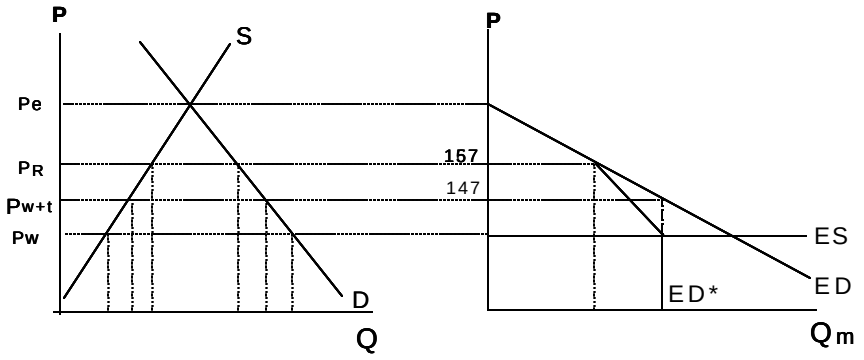

Figure 3: Adjusted varying import levy scheme

7. Conclusion

In this paper the variable import levy scheme of the wheat sector in South Africa was closely examined. It was determined that there exists some level of "distortion" in the calculation of the levy. It was found that between a specific range of prices ($167-

$147) the variable import levy did not succeed in disconnecting the domestic prices of affected imports from international prices. Although some of the effects on the economy could be identified, a very important issue remains an empirical question. What effect does this "stickiness" in the calculation of the import levy have on the market price of wheat, if any? Finally, the reasoning for the calculation of the import levy in this unique way needs to be addressed. Firstly, one can imagine that this method of calculation reduces the frequency of publishing new levies. This will decrease the cost of publishing and ease the burden on importers and exporters, who have to price commodities on a daily basis. Secondly, one can argue that although, for some phases the world price will be higher than the reference price and for some phases it will be lower than the reference price, the world price will reach an average of approximately $157/ton.

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